



# STIC Search Report

EIC 1700

STIC Database Tracking Number 157955

**TO: Camie Thompson**

**Location: 10D28**

**Art Unit : 1774**

**July 13, 2005**

**Case Serial Number: 10500837**

**From: Usha Shrestha**

**Location: EIC 1700**

**REMSSEN 4B28**

**Phone: 571/272-3519**

**usha.shrestha@uspto.gov**

## Search Notes

DO

# SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Cami Thompson Examiner #: 79244 Date: 4/21/05  
 Art Unit: 1774 Phone Number: 571-272-1530 Serial Number: 10/500837  
 Mail Box and Bldg/Room Location: Dem 10B28 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: luminescent compound emitting white light  
 Inventors (please provide full names): Tadao Nakaya; Akihisa Ikeda;  
Tomoyuki Saikawa; Yoshihiro Kimura; Takao Yamauchi  
 Earliest Priority Filing Date: 1/18/02

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

SCIENTIFIC REFERENCE BR.  
 Sci. & Tech. Inf. Ctr.

JUN 30 RECD

Pat. & T.M. Office

*Please do a search on claims*

*1-2; 16-32*

*compounds included*

*Thanks*

## STAFF USE ONLY

Searcher: Vishai  
 Searcher Phone #: \_\_\_\_\_  
 Searcher Location: \_\_\_\_\_  
 Date Searcher Picked Up: 7/13/05  
 Date Completed: 7/13/05

## Type of Search

NA Sequence (#) \_\_\_\_\_  
 AA Sequence (#) \_\_\_\_\_  
 Structure (#) \_\_\_\_\_  
 Bibliographic \_\_\_\_\_  
 Litigation \_\_\_\_\_

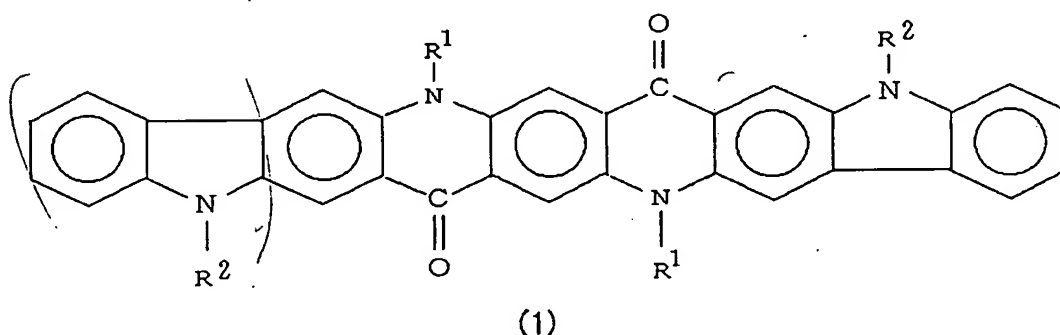
## Vendors and cost where applicable

STN 9 100.48  
 Dialog \_\_\_\_\_  
 Questel/Orbit \_\_\_\_\_  
 Dr.Link \_\_\_\_\_  
 Lexis/Nexis \_\_\_\_\_

**AMENDMENTS TO THE CLAIMS, COMPLETE LISTING OF CLAIMS**  
**IN ASCENDING ORDER WITH STATUS INDICATOR**

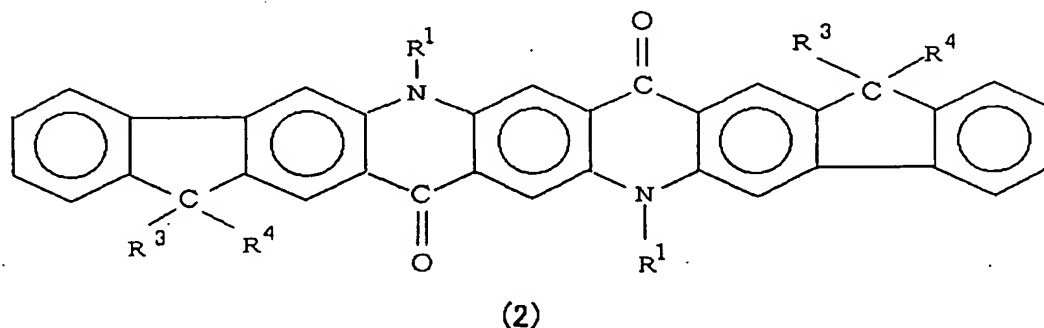
Please amend the claims as follows.

1. (Currently Amended) A luminescent compound capable of emitting white light that has a structure represented by formula (1):



wherein  $R^1$  is a hydrogen atom, an alkyl group, or an aryl or alkyl aryl group that may have at least one substituent, wherein two  $R^1$ 's may be the same or different from each other;  $R^2$  is a hydrogen atom, an alkyl group, or an aryl or alkyl aryl group that may have at least one substituent, wherein two  $R^2$ 's may be the same or different from each other; and  $R^1$  and  $R^2$  may be the same or different from each other.

2. (Currently Amended) A luminescent compound capable of emitting white light that has a structure represented by formula (2):

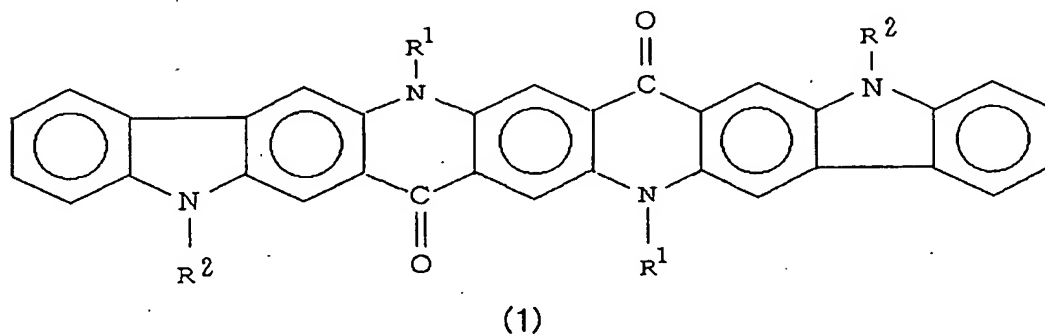


wherein  $R^1$  is a hydrogen atom, an alkyl group, or an aryl or alkyl aryl group that may have at least one substituent, wherein two  $R^1$ 's may be the same or different from each other; each of  $R^3$  and  $R^4$  is a hydrogen atom, an alkyl group, or an aryl or alkyl aryl group that may have at least one substituent, wherein  $R^3$  and  $R^4$  may be the same or different from each other; and two  $R^3$ 's may be the same or different, and two  $R^4$ 's may be the same or different.

Claims 3-15 (Canceled).

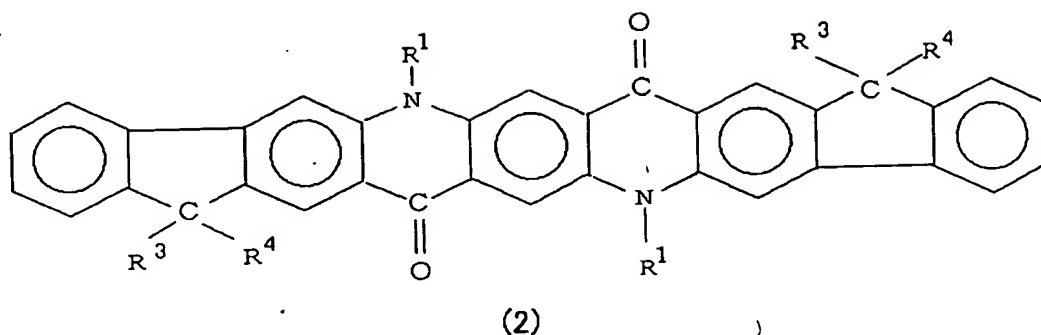
16. (New) A layered article comprising at least one luminescent compound selected from the group consisting of

(A) a luminescent compound capable of emitting white light that has a structure represented by formula (1):



wherein  $R^1$  is a hydrogen atom, an alkyl group, or an aryl or alkyl aryl group that may have at least one substituent, wherein two  $R^1$ 's may be the same or different from each other;  $R^2$  is a hydrogen atom, an alkyl group, or an aryl or alkyl aryl group that may have at least one substituent, wherein two  $R^2$ 's may be the same or different from each other; and  $R^1$  and  $R^2$  may be the same or different from each other, and

(B) a luminescent compound capable of emitting white light that has a structure represented by formula (2):



wherein  $R^1$  is a hydrogen atom, an alkyl group, or an aryl or alkyl aryl group that may have at least one substituent, wherein two  $R^1$ 's may be the same or different from each other; each of  $R^3$  and  $R^4$  is a hydrogen atom, an alkyl group, or an aryl or alkyl aryl group that may have at least one substituent, wherein  $R^3$  and  $R^4$  may be the same or different from each other; and two  $R^3$ 's may be the same or different, and two  $R^4$ 's may be the same or different.

17. (New) The layered article according to claim 16, in a form of an organic EL element comprising a substrate, a pair of electrodes, and at least one light-emitting layer sandwiched between the electrodes, wherein said light-emitting layer comprises at least one of said luminescent compound, and wherein one of the electrodes is formed on the substrate.

18. (New) The layered article according to claim 16, in a form of an illuminator capable of emitting white light, wherein the illuminator comprises a substrate, a pair of electrodes, and at least one light-emitting layer sandwiched between the electrodes, wherein said light-emitting layer comprises at least one of said luminescent compound, and wherein one of the electrodes is formed on the substrate.

19. (New) The layered article according to claim 18, wherein the illuminator comprises a single light-emitting layer.

20. (New) The layered article according to claim 18, wherein the illuminator (1) comprises two or more light-emitting layers, at least one of which comprises said luminescent compound, and (2) further comprises a hole-transporting layer and an electron-transporting layer.

21. (New) The layered article according to claim 17, wherein said light-emitting layer is prepared by dispersing said luminescent compound in a high polymer.

22. (New) The layered article according to claim 18, wherein said light-emitting layer is prepared by dispersing said luminescent compound in a high polymer.

23. (New) The layered article according to claim 17, wherein said light-emitting layer is prepared by depositing said luminescent compound on said substrate.

24. (New) The layered article according to claim 18, wherein said light-emitting layer is prepared by depositing said luminescent compound on said substrate.

25. (New) The layered article according to claim 17, wherein said article has a planar shape.

26. (New) The layered article according to claim 17, wherein said article has a tubular shape.

27. (New) The layered article according to claim 18, wherein said article has a planar shape.

28. (New) The layered article according to claim 18, wherein said article has a tubular shape.

29. (New) The layered article according to claim 19, wherein said article has a planar shape.

30. (New) The layered article according to claim 19, wherein said article has a tubular shape.

31. (New) The layered article according to claim 20, wherein said article has a planar shape.

32. (New) The layered article according to claim 20, wherein said article has a tubular shape.

=> fil reg  
FILE 'REGISTRY' ENTERED AT 11:50:14 ON 13 JUL 2005

=> d his

FILE 'HCAPLUS' ENTERED AT 11:06:15 ON 13 JUL 2005  
L1 2 S US20050118454/PN  
SEL RN

FILE 'REGISTRY' ENTERED AT 11:06:57 ON 13 JUL 2005  
L2 34 S E1-E34  
L3 2 S 13075.10/RID  
L4 13 S 13075.3/RID  
L5 10 S L2 AND L4  
L6 1 S L2 AND L3  
L7 15 S L3 OR L4

FILE 'HCAPLUS' ENTERED AT 11:38:08 ON 13 JUL 2005  
L8 9 S L7

FILE 'REGISTRY' ENTERED AT 11:50:14 ON 13 JUL 2005

=> d que 18

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L4 13 SEA FILE=REGISTRY ABB=ON PLU=ON 13075.3/RID  
L7 15 SEA FILE=REGISTRY ABB=ON PLU=ON L3 OR L4  
L8 9 SEA FILE=HCAPLUS ABB=ON PLU=ON L7

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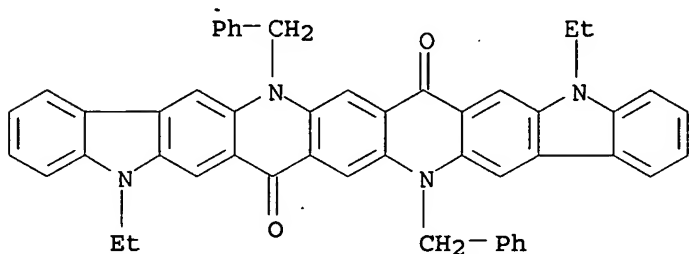
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L8 ANSWER 1 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2005:322992 HCAPLUS  
DOCUMENT NUMBER: 142:382321  
TITLE: Electroluminescent displays showing  
long-lasting vividness of emission color  
INVENTOR(S): Nakaya, Tadao; Ikeda, Atsushi; Saikawa,  
Tomoyuki  
PATENT ASSIGNEE(S): Hirose Engineering Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 37 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

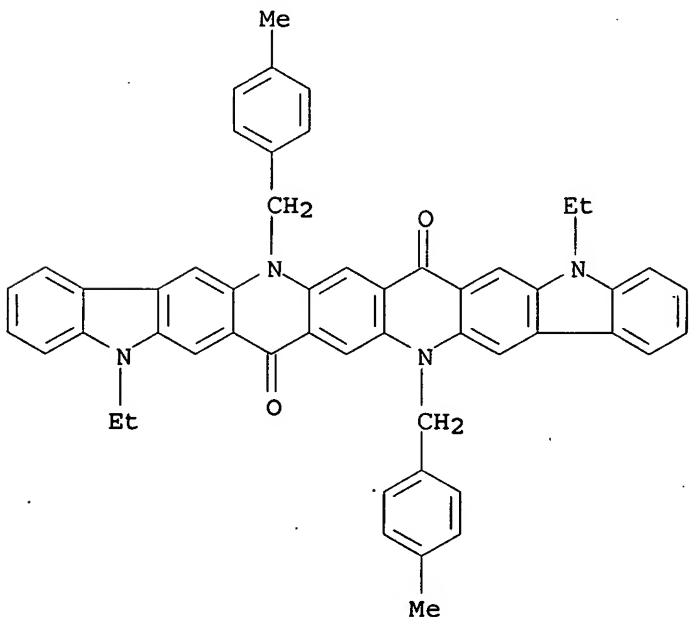
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005097537	A2	20050414	JP 2004-190886	2004 0629
PRIORITY APPLN. INFO.:			JP 2003-299379	A 2003 0822



- AB The displays include  $\leq 350$ -nm-emitting LED and emission members containing the LED-stimulated light-emitting compds. (e.g., white-emitting macromol. compds., Nile Red, quinacridone derivs., etc.).
- IT 556112-39-1 556112-48-2  
(white emitting layers; electroluminescent displays containing UV-stimulable organic fluorescent mols. and showing long-lasting vividness of emission color)
- RN 556112-39-1 HCAPLUS
- CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione, 5,15-diethyl-5,9,15,19-tetrahydro-9,19-bis(phenylmethyl) - (9CI) (CA INDEX NAME)



- RN 556112-48-2 HCAPLUS
- CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione, 5,15-diethyl-5,9,15,19-tetrahydro-9,19-bis[(4-methylphenyl)methyl] - (9CI) (CA INDEX NAME)



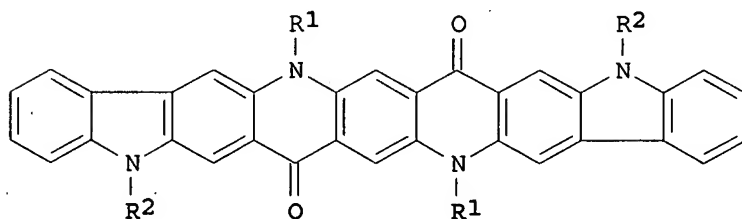
- IC ICM C09K011-08
- ICS C09K011-06; G09F009-30
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 73

IT 96710-17-7 556112-39-1 556112-48-2  
 676343-04-7 849681-74-9  
 (white emitting layers; electroluminescent displays containing  
 UV-stimulable organic fluorescent mols. and showing long-lasting  
 vividness of emission color)

L8 ANSWER 2 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 2005:235583 HCAPLUS  
 DOCUMENT NUMBER: 142:306160  
 TITLE: Full-color imaging display utilizing  
 white-emitting compound  
 INVENTOR(S): Nakaya, Tadao; Saikawa, Tomoyuki; Tobita,  
 Michiaki  
 PATENT ASSIGNEE(S): Hirose Engineering Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 38 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005071773	A2	20050317	JP 2003-299377	2003 0822
PRIORITY APPLN. INFO.:				2003 0822

GI

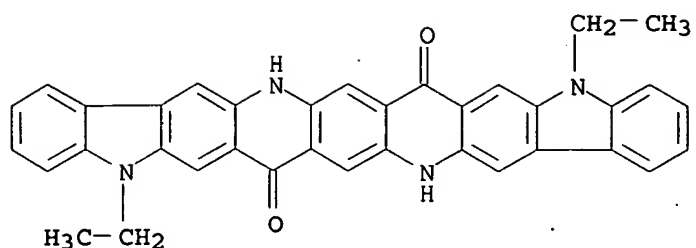


AB The invention refers to a full-color display comprising color  
 filters comprising a matrix of pixels containing a blue transmitting,  
 green transmitting and red transmitting components and an organic  
 white emitting electroluminescent compound I [R1 = H, aryl, aryl or  
 arylalkyl; R2 = H, alkyl, aryl or arylalkyl].

IT 105123-26-0P 222403-00-1P 556112-39-1P  
 (full-color imaging display utilizing white-emitting compound)

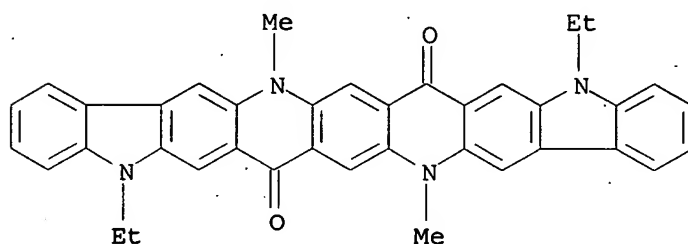
RN 105123-26-0 HCAPLUS

CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
 5,15-diethyl-5,9,15,19-tetrahydro- (7CI, 9CI) (CA INDEX NAME)



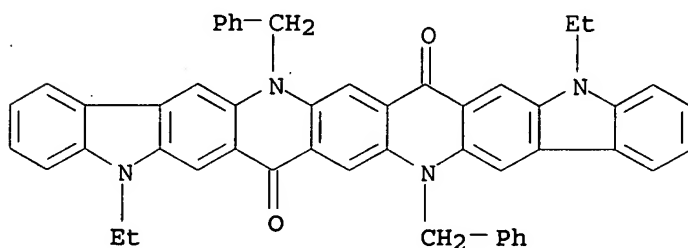
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CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
5,15-diethyl-5,9,15,19-tetrahydro-9,19-dimethyl- (9CI) (CA INDEX  
NAME)



RN 556112-39-1 HCAPLUS

CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
5,15-diethyl-5,9,15,19-tetrahydro-9,19-bis(phenylmethyl)- (9CI)  
(CA INDEX NAME)



IC ICM H05B033-14

ICS C07D471-04; C07D471-22; C09K011-06; H05B033-12

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)

Section cross-reference(s): 74

IT 105123-26-0P 142226-72-0P 222403-00-1P  
556112-39-1P

(full-color imaging display utilizing white-emitting compound)

L8 ANSWER 3 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:550675 HCAPLUS

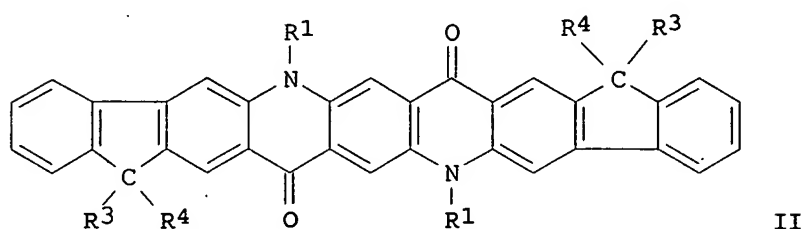
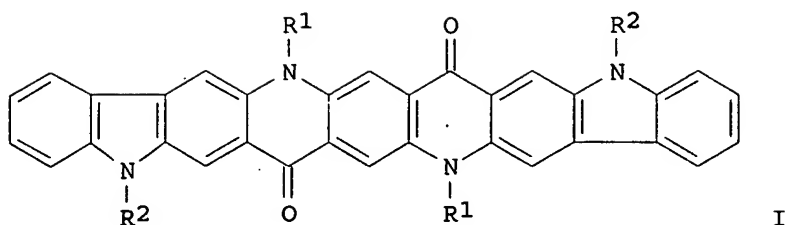
DOCUMENT NUMBER: 139:124814

TITLE: Single compound white luminescent device and  
white electroluminescent component using

carbazole or quinacridone derivative  
 INVENTOR(S): Nakaya, Tadao; Eto, Naonobu; Saikawa,  
 Tomoyuki; Ikeda, Atsushi; Kimura, Yoshihiro;  
 Yamauchi, Takao  
 PATENT ASSIGNEE(S): Taiho Kogyo Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 26 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003203780	A2	20030718	JP 2002-10895	2002 0118
WO 2003062237	A1	20030731	WO 2003-JP359	2003 0117
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1475380	A1	20041110	EP 2003-701109	2003 0117
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
US 2005118454	A1	20050602	US 2003-500837	2003 0117
PRIORITY APPLN. INFO.:				
			JP 2001-333569	A 2001 1030
			JP 2002-10895	A 2002 0118
			JP 2002-12223	A 2002 0121
			WO 2003-JP359	W 2003 0117

OTHER SOURCE(S): MARPAT 139:124814  
 GI



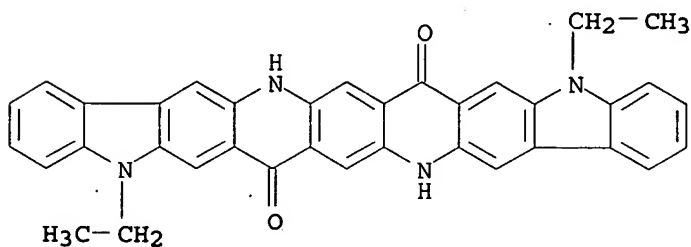
AB The invention refers to an electroluminescent device using a single compound to produce white luminescence comprising either a carbazole I [R<sub>1,2</sub> = H, alkyl, aryl, arylalkyl] or quinacridone II [R<sub>1,3,4</sub> = H, alkyl, aryl or arylalkyl] derivative as the luminescent material.

IT 105123-26-0P 222403-00-1P 556112-39-1P  
556112-48-2P 562858-50-8P

(single compound white luminescent device and white electroluminescent component using carbazole or quinacridone derivative)

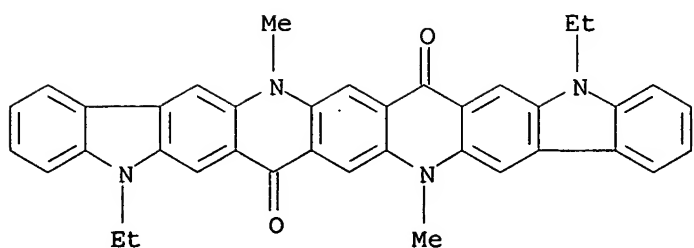
RN 105123-26-0 HCAPLUS

CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione, 5,15-diethyl-5,9,15,19-tetrahydro- (7CI, 9CI) (CA INDEX NAME)

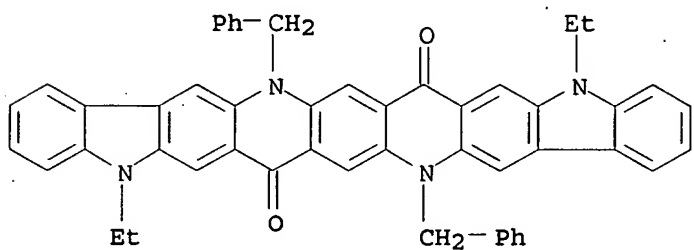


RN 222403-00-1 HCAPLUS

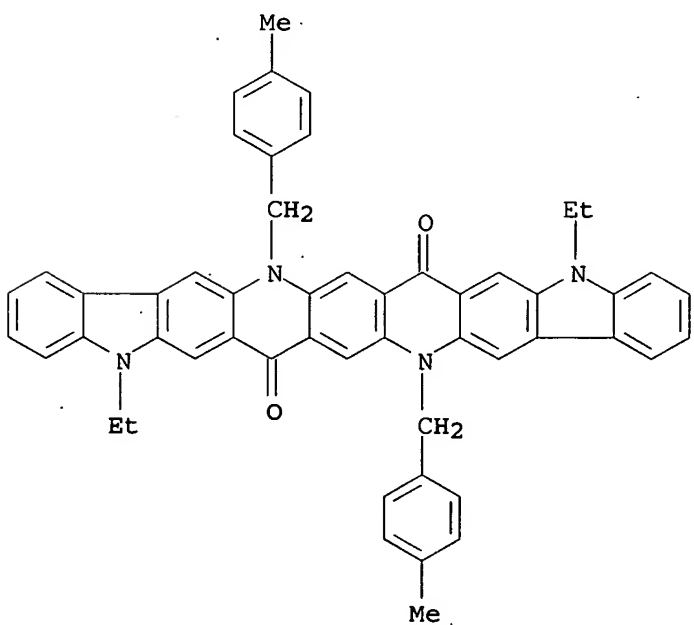
CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione, 5,15-diethyl-5,9,15,19-tetrahydro-9,19-dimethyl- (9CI) (CA INDEX NAME)



RN 556112-39-1 HCAPLUS  
 CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
 5,15-diethyl-5,9,15,19-tetrahydro-9,19-bis(phenylmethyl) - (9CI)  
 (CA INDEX NAME)

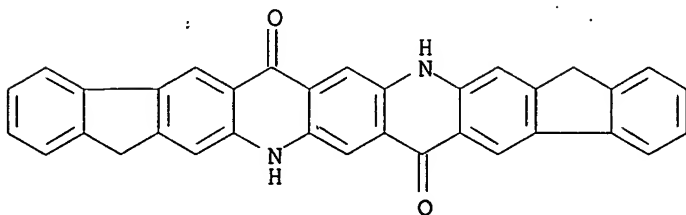


RN 556112-48-2 HCAPLUS  
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 5,15-diethyl-5,9,15,19-tetrahydro-9,19-bis[(4-methylphenyl)methyl] -  
 (9CI) (CA INDEX NAME)



RN 562858-50-8 HCAPLUS

CN Indeno[1,2-b]indeno[1',2':6,7]quino[3,2-i]acridine-9,19-dione,  
5,7,15,17-tetrahydro- (9CI) (CA INDEX NAME)



IC ICM H05B033-14  
ICS C09K011-06; H05B033-12; C07D487-22  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
IT 105123-26-0P 222403-00-1P 556112-39-1P  
556112-48-2P 562858-50-8P  
(single compound white luminescent device and white electroluminescent component using carbazole or quinacridone derivative)

L8 ANSWER 4 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 2003:525414 HCAPLUS  
DOCUMENT NUMBER: 139:85329  
TITLE: Preparation of white fluorescent quinacridones  
INVENTOR(S): Nakaya, Tadao; Eto, Naonobu; Saikawa, Tomoyuki; Ikeda, Atsushi; Kimura, Yoshihiro; Yamauchi, Takao  
PATENT ASSIGNEE(S): Taiho Kogyo Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 31 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 2  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003192684	A2	20030709	JP 2002-12223	2002 0121
WO 2003062237	A1	20030731	WO 2003-JP359	2003 0117

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1475380 A1 20041110 EP 2003-701109

2003  
0117

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EE, HU, SK

US 2005118454 A1 20050602 US 2003-500837

2003  
0117

PRIORITY APPLN. INFO.:

JP 2001-292509

A

2001  
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JP 2001-317385

A

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JP 2001-319621

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JP 2002-10895

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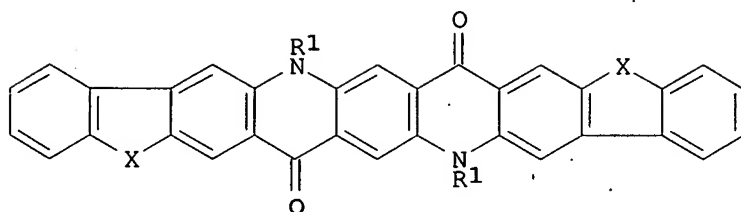
WO 2003-JP359

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OTHER SOURCE(S):  
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MARPAT 139:85329



I

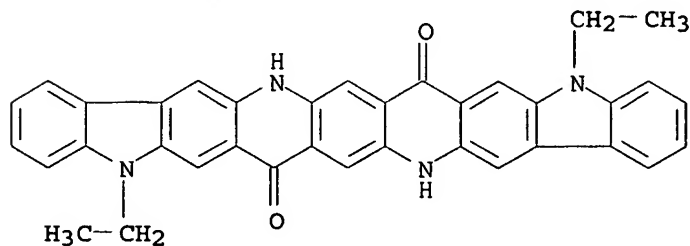
AB Title compds. I (X = NR<sub>2</sub>, CR<sub>3</sub>R<sub>4</sub>; R<sub>1</sub>-R<sub>4</sub> = H, alkyl, aryl, arylalkyl), showing good fastness, processability, and high luminance, are prepared 3-Amino-9-ethylcarbazole was condensed with 1,4-bis(ethoxycarbonyl)-2,5-dihydroxy-1,4-cyclohexadiene, dehydrogenated, and intramolecularly cyclocondensed to give I (R<sub>1</sub> = H, X = NEt) (II). An electroluminescent device using II showed luminance 2300 Cd/m<sup>2</sup> and chromaticity X = Y = 0.33 at 21 V and 9.69 mA.

IT 105123-26-0P 222403-00-1P 556112-39-1P  
556112-42-6P 556112-44-8P 556112-46-0P  
556112-48-2P 556112-50-6P 556112-52-8P  
556112-55-1P

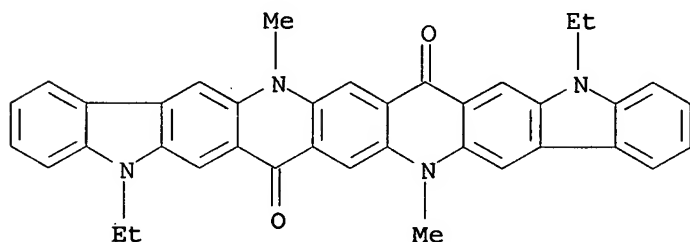


(preparation of white fluorescent quinacridones)

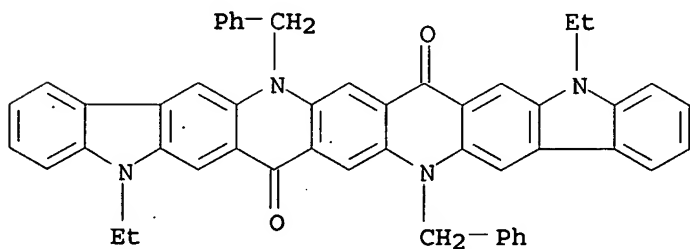
RN 105123-26-0 HCAPLUS  
 CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
 5,15-diethyl-5,9,15,19-tetrahydro- (7CI, 9CI) (CA INDEX NAME)



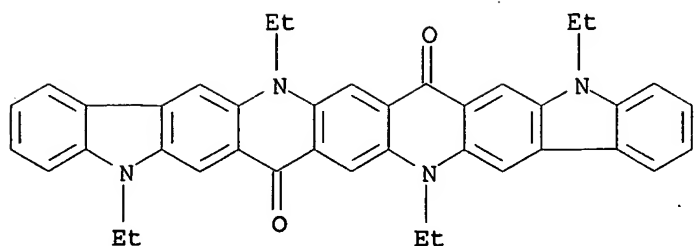
RN 222403-00-1 HCAPLUS  
 CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
 5,15-diethyl-5,9,15,19-tetrahydro-9,19-dimethyl- (9CI) (CA INDEX NAME)



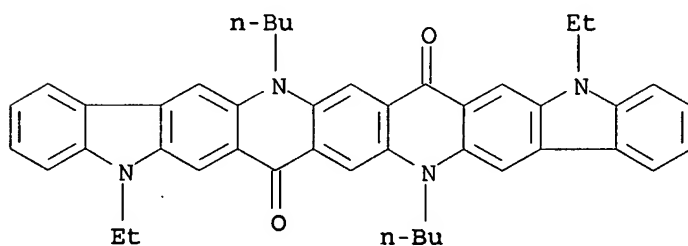
RN 556112-39-1 HCAPLUS  
 CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
 5,15-diethyl-5,9,15,19-tetrahydro-9,19-bis(phenylmethyl)- (9CI)  
 (CA INDEX NAME)



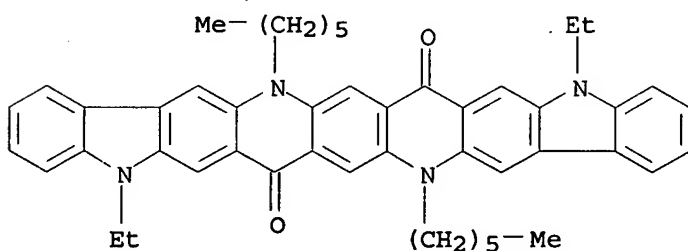
RN 556112-42-6 HCAPLUS  
 CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
 5,9,15,19-tetraethyl-5,9,15,19-tetrahydro- (9CI) (CA INDEX NAME)



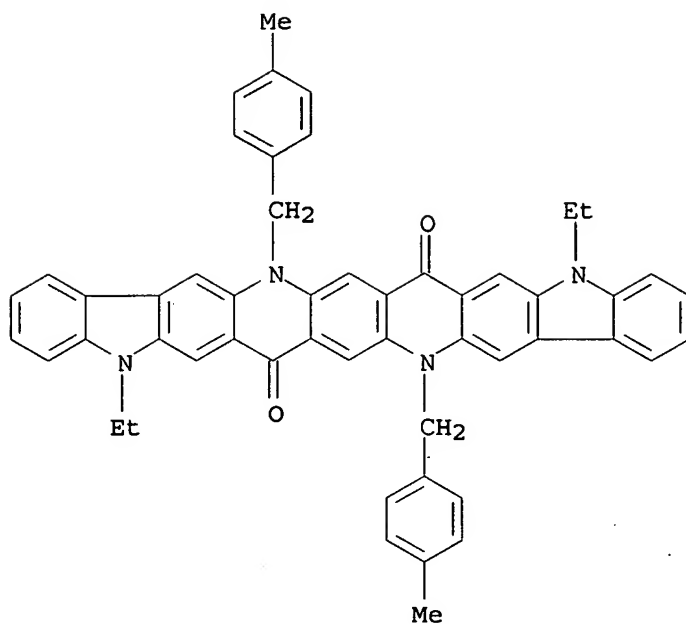
RN 556112-44-8 HCAPLUS  
 CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
 9,19-dibutyl-5,15-diethyl-5,9,15,19-tetrahydro- (9CI) (CA INDEX  
 NAME)



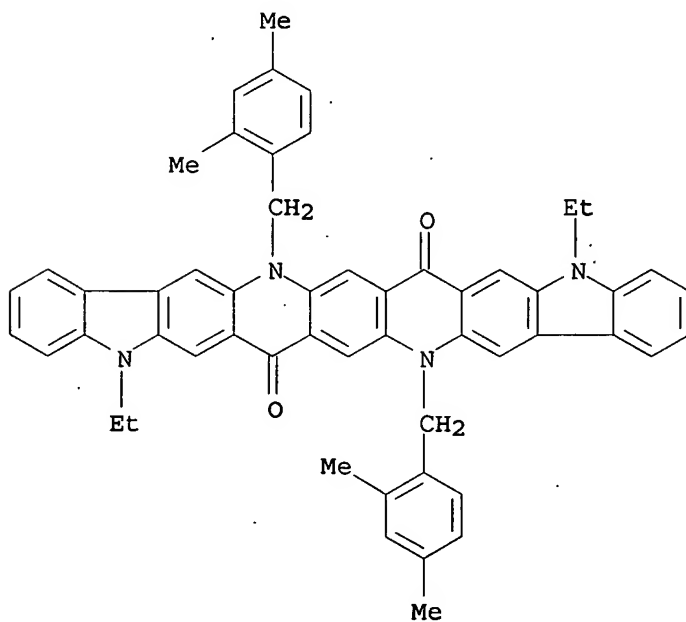
RN 556112-46-0 HCAPLUS  
 CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
 5,15-diethyl-9,19-dihexyl-5,9,15,19-tetrahydro- (9CI) (CA INDEX  
 NAME)



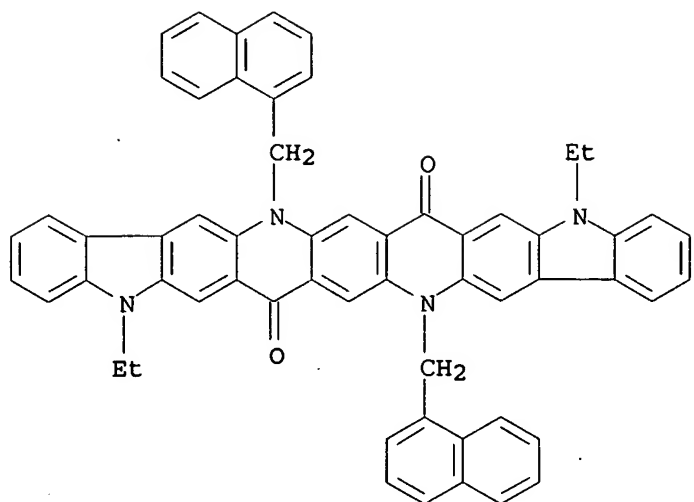
RN 556112-48-2 HCAPLUS  
 CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
 5,15-diethyl-5,9,15,19-tetrahydro-9,19-bis[(4-methylphenyl)methyl]-  
 (9CI) (CA INDEX NAME)



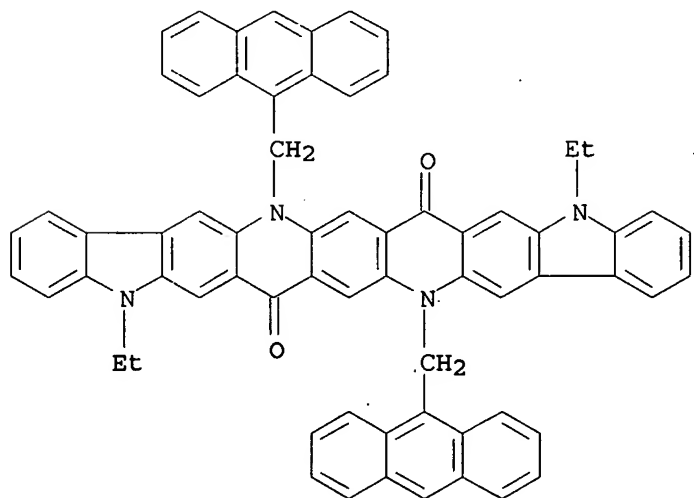
RN 556112-50-6 HCAPLUS  
 CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
 9,19-bis[(2,4-dimethylphenyl)methyl]-5,15-diethyl-5,9,15,19-  
 tetrahydro- (9CI) (CA INDEX NAME)



RN 556112-52-8 HCAPLUS  
 CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
 5,15-diethyl-5,9,15,19-tetrahydro-9,19-bis(1-naphthalenylmethyl)-  
 (9CI) (CA INDEX NAME)



RN 556112-55-1 HCAPLUS  
 CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
 9,19-bis(9-anthracenylmethyl)-5,15-diethyl-5,9,15,19-tetrahydro-  
 (9CI) (CA INDEX NAME)



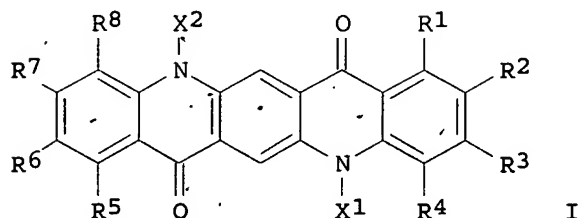
IC ICM C07D471-04  
 ICS C07D471-22; C09K011-06; H05B033-14  
 CC 28-2 (Heterocyclic Compounds (More Than One Hetero Atom))  
 Section cross-reference(s): 73  
 IT 105123-26-0P 142226-72-0P 222403-00-1P  
 556112-39-1P 556112-42-6P 556112-44-8P  
 556112-46-0P 556112-48-2P 556112-50-6P  
 556112-52-8P 556112-55-1P  
 (preparation of white fluorescent quinacridones)

L8 ANSWER 5 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN  
 ACCESSION NUMBER: 1999:210054 HCAPLUS  
 DOCUMENT NUMBER: 130:273923

TITLE: Organic electric-field light-emitting device  
containing quinacridone compound  
INVENTOR(S): Nakatsuka, Masakatsu; Kitamoto, Noriko  
PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 11087059	A2	<u>19990330</u>	<u>JP 1997-255989</u>	1997 0904
PRIORITY APPLN. INFO.:				JP 1997-255989
				1997 0904

OTHER SOURCE(S): MARPAT 130:273923  
GI

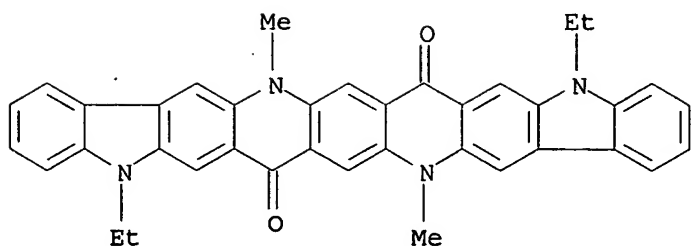


AB The device has a pair of electrodes sandwiching a layer containing a quinacridone derivative I (R1-8 = H, halogen, linear, branched, or cyclic alkyl or alkoxy, aryl, N,N-diamino; X1,2 = H, linear, branched, or cyclic alkyl, aryl, aralkyl; R1 and R2, R2 and R3, R3 and R4, R5 and R6, R6 and R7, and/or R7 and R8 bond to form an carbocyclic aliphatic, carbocyclic aromatic, heterocyclic aromatic; X1 = X2 ≠ H). The device shows excellent luminance.

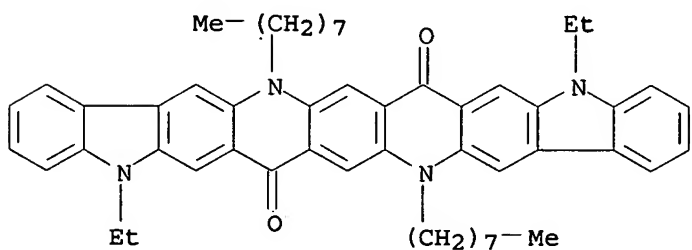
IT 222403-00-1 222403-01-2  
(organic elec.-field light-emitting device containing quinacridone derivative)

RN 222403-00-1 HCAPLUS

CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
5,15-diethyl-5,9,15,19-tetrahydro-9,19-dimethyl- (9CI) (CA INDEX NAME)



RN 222403-01-2 HCAPLUS  
 CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
 5,15-diethyl-5,9,15,19-tetrahydro-9,19-dioctyl- (9CI) (CA INDEX  
 NAME)



IC ICM H05B033-14  
 ICS C09K011-06; H05B033-22  
 CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 IT 186889-95-2 222321-52-0 222402-84-8 222402-85-9  
 222402-86-0 222402-87-1 222402-88-2 222402-89-3  
 222402-90-6 222402-91-7 222402-92-8 222402-93-9  
 222402-94-0 222402-95-1 222402-96-2 222402-97-3  
 222402-98-4 222402-99-5 222403-00-1  
 222403-01-2  
 (organic elec.-field light-emitting device containing quinacridone  
 derivative)

L8 ANSWER 6 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1993:149450 HCAPLUS  
 Correction of: 1992:428765

DOCUMENT NUMBER: 118:149450  
 Correction of: 117:28765

TITLE:  $\alpha$ -Quinacridone pigments and their  
 preparation

INVENTOR(S): Kaneuchi, Kiyoshi; Yoo, Kyung Ho; Kang, Yong  
 Koo

PATENT ASSIGNEE(S): Korea Institute of Science and Technology  
 (KIST), S. Korea

SOURCE: Ger. Offen., 8 pp.  
 CODEN: GWXXBX

DOCUMENT TYPE: Patent  
 LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 4119100	A1	19920402	DE 1991-4119100	1991 0610
DE 4119100 CH 682077	C2 A	19961219 19930715	CH 1991-193	1991 0122
JP 04224579	A2	19920813	JP 1991-89276	1991 0329
JP 06047590	B4	19940622		
PRIORITY APPLN. INFO.:			KR 1990-15291	A 1990 0926

OTHER SOURCE(S): MARPAT 118:149450

GI For diagram(s), see printed CA Issue.

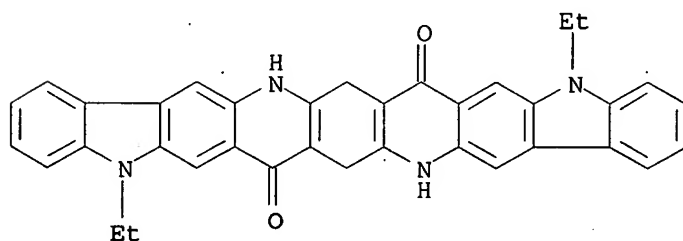
AB Red pigments I (A ring = cyclopentane, methylenedioxy, indan, or N-ethylindole) are prepared from di-Et 1,4-cyclohexanedione-2,5-dicarboxylate (II) and III. Thus, II was condensed with 5-aminoindan to give 92.6% di-Et 2,4-bis(5-indanylamino)-3,6-dihydroterephthalate, which was cyclocondensed to the dihydroquinacridone (78%), which was aromatized (95%) to the red pigment I (A ring = cyclopentane).

IT 142226-69-5P

(preparation and aromatization of)

RN 142226-69-5 HCAPLUS

CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione, 5,15-diethyl-5,8,9,15,18,19-hexahydro- (9CI) (CA INDEX NAME)

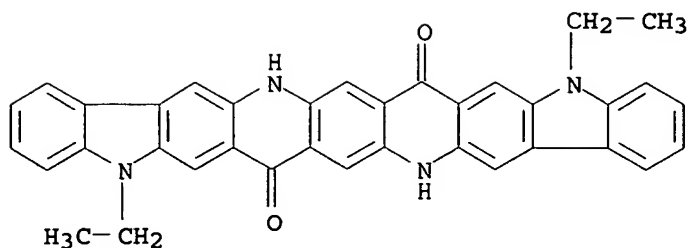


IT 105123-26-0P

(preparation of, as red pigment)

RN 105123-26-0 HCAPLUS

CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione, 5,15-diethyl-5,9,15,19-tetrahydro- (7CI, 9CI) (CA INDEX NAME)



IC ICM C09B048-00  
ICS C07D219-06; C07D471-04; C07D471-22; C07D491-056  
ICA C09B067-20  
ICI C07D471-22, C07D209-00; C07D491-056, C07D221-00; C07D317-00  
CC 41-5 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)  
IT 142226-66-2P 142226-67-3P 142226-68-4P 142226-69-5P  
(preparation and aromatization of)  
IT 105123-26-0P 142226-70-8P 142226-71-9P 142226-72-0P  
(preparation of, as red pigment)

L8 ANSWER 7 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN  
ACCESSION NUMBER: 1992:428765 HCAPLUS  
DOCUMENT NUMBER: 117:28765  
TITLE: Preparation of  $\alpha$ -quinacridone derivatives as red pigments  
INVENTOR(S): Kaneuchi, Kiyoshi; Yoo, Kyung Ho; Kang, Yong Koo  
PATENT ASSIGNEE(S): Korea Institute of Science and Technology (KIST), S. Korea  
SOURCE: Ger. Offen., 8 pp.  
CODEN: GWXXBX  
DOCUMENT TYPE: Patent  
LANGUAGE: German  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 4119100 A1		19920402	DE 1991-4119100	1991 0610

PRIORITY APPLN. INFO.: KR 1990-15291  
19900926

OTHER SOURCE(S): MARPAT 117:28765

GI For diagram(s), see printed CA Issue.

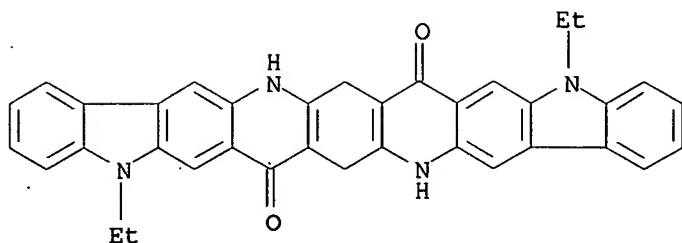
AB Red pigments I (A ring = cyclopentane, methylenedioxy, indan, or N-ethylindole) are prepared from di-Et 1,4-cyclohexanedione-2,5-dicarboxylate (II) and III. Thus, II was condensed with 5-aminoindan to give 92.6% di-Et 2,4-bis(5-indanylamino)-3,6-dihydroterephthalate, which was cyclocondensed to the dihydroquinacridone (78%), which was aromatized (95%) to the red pigment I (A ring = cyclopentane).

IT 142226-69-5P  
(preparation and aromatization of)

RN 142226-69-5 HCAPLUS

CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione, 5,15-diethyl-5,8,9,15,18,19-hexahydro- (9CI) (CA INDEX NAME)

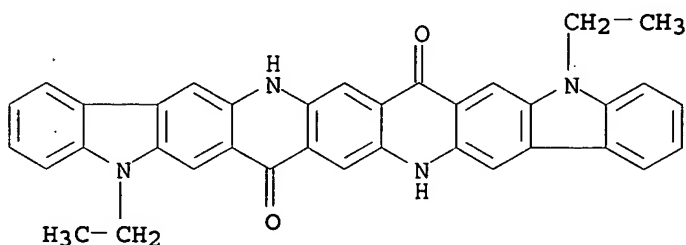




IT 105123-26-0P

(preparation of, as red pigment)

RN 105123-26-0 HCAPLUS

CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
5,15-diethyl-5,9,15,19-tetrahydro- (7CI, 9CI) (CA INDEX NAME)

IC ICM C09B048-00

ICS C07D219-06; C07D471-04; C07D471-22; C07D491-056

ICA C09B067-20

ICI C07D471-22, C07D209-00; C07D491-056, C07D221-00; C07D317-00

CC 41-5 (Dyes, Organic Pigments, Fluorescent Brighteners, and  
Photographic Sensitizers)IT 142226-66-2P 142226-67-3P 142226-68-4P 142226-69-5P  
(preparation and aromatization of)IT 105123-26-0P 142226-70-8P 142226-71-9P 142226-72-0P  
(preparation of, as red pigment)

L8 ANSWER 8 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1963:428565 HCAPLUS

DOCUMENT NUMBER: 59:28565

ORIGINAL REFERENCE NO.: 59:5172b-c

TITLE: Thioctic anhydride

INVENTOR(S): Kishi, Toyokazu; Kobata, Akira

PATENT ASSIGNEE(S): Takeda Chemical Industries, Ltd.

SOURCE: 1 p.

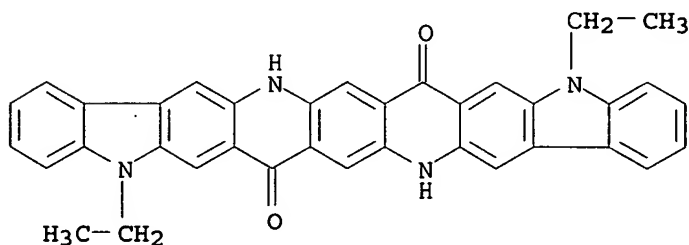
DOCUMENT TYPE: Patent

LANGUAGE: Unavailable

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 37007968		19620711	JP	1959 0504

- GI For diagram(s), see printed CA Issue.
- AB To a solution of 2 g. thioctic acid in 30 cc. Et2O is added a solution of 1 g. dicyclohexylcarbodiimide in 20 cc. Et2O, and the mixture allowed to stand for a while and filtered. The filtrate is concentrated in vacuo, the resulting pale yellow sirup is dissolved in Et2O, petr. ether added, the mixture filtered, and the filtrate concentrated in vacuo to give the title compound (I), an oil.
- IT 105123-26-0, Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione, 5,15-diethyl-5,9,15,19-tetrahydro- (preparation of)
- RN 105123-26-0 HCAPLUS
- CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione, 5,15-diethyl-5,9,15,19-tetrahydro- (7CI, 9CI) (CA INDEX NAME)



- CC 38 (Heterocyclic Compounds (More Than One Hetero Atom))
- IT 2190-65-0, Quino[2,3-b]acridine-7,14-dione, 3,4,10,11-tetrachloro-5,12-dihydro- 3089-16-5, Quino[2,3-b]acridine-7,14-dione, 4,11-dichloro-5,12-dihydro- 3089-17-6, Quino[2,3-b]acridine-7,14-dione, 2,9-dichloro-5,12-dihydro- 7520-01-6, Benzo[h]benzo[7,8]quino[2,3-b]acridine-7,16-dione, 9,18-dihydro-7520-04-9, Quino[2,3-b]acridine-7,14-dione, 1,8-dichloro-5,12-dihydro-4,11-dimethyl- 10005-31-9, Quino[2,3-b]acridine-7,14-dione, 3,10-dichloro-5,12-dihydro-2,9-dimethyl- 16043-40-6, Quino[2,3-b]acridine-7,14-dione, 5,12-dihydro-3,10-dimethyl-18991-69-0, Quino[2,3-b]acridine-7,14-dione, 5,12-dihydro-2,4,9,11-tetramethyl- 52000-71-2, Quino[2,3-b]acridine-7,14-dione, 2,9-dibromo-5,12-dihydro- 91319-83-4, 1,2-Dithiolane-3-valeric anhydride 97864-02-3, Quino[2,3-b]acridine-7,14-dione, 3,10-dibromo-5,12-dihydro- 100734-58-5, Quino[2,3-b]acridine-7,14-dione, 3,10-dichloro-5,12-dihydro-1,8-dimethyl-100734-59-6, Quino[2,3-b]acridine-7,14-dione, 2,9-dichloro-5,12-dihydro-4,11-dimethyl- 100979-19-9, Quino[2,3-b]acridine-7,14-dione, 3,10-dichloro-5,12-dihydro-4,11-dimethyl- 100979-20-2, Quino[2,3-b]acridine-7,14-dione, 3,11-dichloro-5,12-dihydro-2,9-dimethyl- 103800-71-1, Quino[2,3-b]acridine-7,14-dione, 5,12-dihydro-2,9-diphenyl- 105123-26-0, Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione, 5,15-diethyl-5,9,15,19-tetrahydro- (preparation of)

L8 ANSWER 9 OF 9 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1963:428564 HCAPLUS

DOCUMENT NUMBER: 59:28564

ORIGINAL REFERENCE NO.: 59:5172a-b

TITLE: Purification of linear quinacridones

PATENT ASSIGNEE(S): Farbwerke Hoechst A.-G.

SOURCE: 14 pp.

DOCUMENT TYPE: Patent

LANGUAGE: Unavailable  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
BE 618873		19621213	BE	
GB 1004923			GB	
US 3256285		1966	US	
PRIORITY APPLN. INFO.:			DE	
				1961
				0613

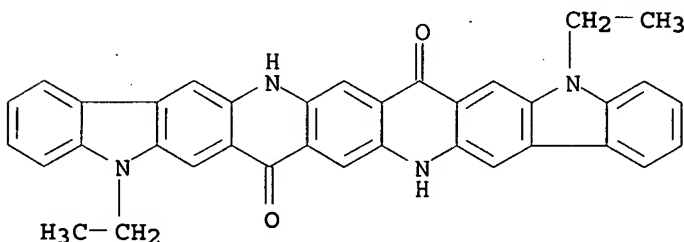
GI For diagram(s), see printed CA Issue.

AB Crude, wet linear quinacridones, prepd, by the treatment of 2,5-dianilinoterephthalic acids, with pyrophosphoric acid, are heated with a C2-4 alc., ether, or a heterocyclic compound, such as quinoline, at 80-150° 30 min. to 5 hrs. and then washed with a low-boiling solvent to give pure material. Thus, crude, wet quinacridone 110 and EtOH 100 parts is heated at 125° 1 hr., the mixture cooled and filtered, the solid material washed with EtOH, and the precipitate dried in vacuo at 80-100° to give 2,9-dimethylquinacridone (I).

IT 105123-26-0, Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione, 5,15-diethyl-5,9,15,19-tetrahydro-(preparation of)

RN 105123-26-0 HCAPLUS

CN Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione, 5,15-diethyl-5,9,15,19-tetrahydro- (7CI, 9CI) (CA INDEX NAME)



CC 38 (Heterocyclic Compounds (More Than One Hetero Atom))

IT 980-26-7, Quino[2,3-b]acridine-7,14-dione, 5,12-dihydro-2,9-dimethyl- 2190-65-0, Quino[2,3-b]acridine-7,14-dione, 3,4,10,11-tetrachloro-5,12-dihydro- 3089-16-5, Quino[2,3-b]acridine-7,14-dione, 4,11-dichloro-5,12-dihydro- 3089-17-6, Quino[2,3-b]acridine-7,14-dione, 2,9-dichloro-5,12-dihydro- 7520-01-6, Benzo[h]benzo[7,8]quino[2,3-b]acridine-7,16-dione, 9,18-dihydro- 7520-04-9, Quino[2,3-b]acridine-7,14-dione, 1,8-dichloro-5,12-dihydro-4,11-dimethyl- 10005-31-9, Quino[2,3-b]acridine-7,14-dione, 3,10-dichloro-5,12-dihydro-2,9-dimethyl- 16043-40-6, Quino[2,3-b]acridine-7,14-dione, 5,12-dihydro-3,10-dimethyl- 18991-69-0, Quino[2,3-b]acridine-7,14-dione, 5,12-dihydro-2,4,9,11-tetramethyl- 52000-71-2, Quino[2,3-b]acridine-7,14-dione, 2,9-dibromo-5,12-dihydro- 97864-02-3, Quino[2,3-b]acridine-7,14-dione, 3,10-dibromo-5,12-dihydro- 100734-58-5, Quino[2,3-b]acridine-7,14-dione, 3,10-dichloro-5,12-dihydro-1,8-dimethyl- 100734-59-6, Quino[2,3-b]acridine-7,14-dione, 2,9-dichloro-5,12-dihydro-4,11-

dimethyl- 100979-19-9, Quino[2,3-b]acridine-7,14-dione,  
3,10-dichloro-5,12-dihydro-4,11-dimethyl- 100979-20-2,  
Quino[2,3-b]acridine-7,14-dione, 3,11-dichloro-5,12-dihydro-2,9-  
dimethyl- 103800-71-1, Quino[2,3-b]acridine-7,14-dione,  
5,12-dihydro-2,9-diphenyl- 105123-26-0,  
Indolo[2,3-b]indolo[2',3':6,7]quino[3,2-i]acridine-7,17-dione,  
5,15-diethyl-5,9,15,19-tetrahydro-  
(preparation of)